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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,001	01/19/2002	Mou-Shiung Lin	MEG01-013	5504

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EXAMINER

CHAMBLISS, ALONZO

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,001

Applicant(s)

LIN ET AL.

Examiner

Alonzo Chambliss

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 7.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

1. The restriction mailed on 11/18/02 in Paper No. 5 has been withdrawn. Claims 39-58 remain pending in the instant application.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 3/7/02 in Paper No. 2 was filed before the mailing date of the non-final rejection on 1/28/03. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. The drawings are objected to because Figs. 4k, 4l, and 5l are not in the Brief description of the drawings. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: second dielectric layer 20 on page 6 line 17. Also, the drawings are objected to because they include the following reference sign(s) not mentioned in the description: 27. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to

the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the connector pins must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: " THIN FILM SEMICONDUCTOR PACKAGE UTILIZING A GLASS SUBSTRATE WITH A COMPOSITE POLYMER/METAL INTERCONNECT LAYERS ".

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 40-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. In Claims 40, 41, the phrase " forming polymer insulating layers and metal interconnect layers " is vague and indefinite since it is not clear over what or where the polymer insulating layers and metal interconnect layers are.

10. In Claims 40, 41, 42, and 53 the phrase " forming a layer of solder " is vague and indefinite since it is not clear over what or where the layer of solder is.

11. Claim 49 recites the limitation " solder bumps " in line 1. There is insufficient antecedent basis for this limitation in the claim.

12. In Claims 41 and 53, the phrase " to obtain a planarized surface " is vague and indefinite since there is no limitation in the claim to perform the planarization of the polymer or epoxy.

13. In Claim 41, the phrase " the desired thickness " is vague and indefinite since it is not clear what the desired thickness is from the claim.

14. In Claim 41, the phrase " grinding the first glass substrate " is vague and indefinite since it is not clear how the first glass substrate is grinded when figures show that the second glass substrate is grinded.

15. In Claim 41, the phrase " a desired glass thickness " is vague and indefinite since it is not clear what the desired thickness is from the claim.

16. In Claim 41, the phrase " etching holes in first glass substrate " is vague and indefinite since it is not clear how the first glass substrate is etched to create holes when figures shows that the second glass substrate holes created by etching.

17. In Claim 41, the phrase " forming polymer insulating layers and metal interconnect layers over said first glass substrate " is vague and indefinite since it is not clear how the first glass substrate has a polymer insulating layers and metal interconnect layer over it when figures shows that the second glass has the polymer insulating layers and metal interconnect layer.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

19. Claim 39, insofar as definite, is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Eichelberger (U.S. 5,250,843).

With respect to Claims 39, Eichelberger teaches providing a planar glass substrate 10 with semiconductors 14 attached to surface of the substrate 10 (see col. 13 lines 51-68). More than one polymer 18, 24 and metal interconnect layers 20, 26 are sequentially deposited over the substrate 10. In the background of the invention, a solder bump bonding procedure is preformed when making connections between the chips to an external device (i.e. substrate) (see col. 1 lines 47-51). The present invention also incorporates a solder bump bonding approach (see col. 5 lines 1-6). It is inherent in a solder bump bonding procedure to form a layer of solder and then reflow the solder to form solder bumps. Thus the button contacts 176 (i.e. solder bumps) are over and connected to one or more metal interconnects layers (see col. 33 lines 20-38; Fig. 14).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 40 and 41, insofar as definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger (U.S. 5,250,843) as applied to claim 39 above, and further in view of Neugebauer et. al. (U.S 5,291,066).

With respect to Claims 40 and 41, Eichelberger fail to disclose a substrate made of glass or composite substrate made of a glass and metal with cavities. However, Neugebauer discloses a substrate 10 made of glass or composite substrate made of a glass and metal with cavities form by the spacers 16. Thus, the substrate is made of composite of metal and glass layers (see col. 3 lines 40-68; Fig.1a). Therefore, one skilled in the art at the time of the invention would readily recognize incorporating a

composite substrate made of metal and glass layers, since it is readily recognized in the semiconductor art to have a substrate made of a composite material as taught by Neugebauer.


The prior art made of record and not relied upon is cited primarily to show the product of the instant invention.

Conclusion

22. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

AC/January 28, 2003


Alonzo Chambliss
Patent Examiner
Art Unit 2827